



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/591,886

04/26/2007

Norwin W. Wolff

0003.2001-003

6951

21005

7590

07/08/2009

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

530 VIRGINIA ROAD

P.O. BOX 9133

CONCORD, MA 01742-9133

EXAMINER

TISCHLER, FRANCES

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

07/08/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,886	Applicant(s) WOLFF ET AL.	
	Examiner FRANCES TISCHLER	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,7,8,10-12,14-16,18,19,21-24,28,31,41-45,53-56 and 58 is/are pending in the application.
- 4a) Of the above claim(s) 62,63,65,66,70-73,79-82,85 and 89 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,7,8,10-12,14-16,18,19,21-24,28,31,41-45,53-56 and 58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

Claims 1, 4, 7, 8, 10 - 12, 14 – 16, 18, 19, 21 - 24, 28, 31, 41 – 45 , 53 – 56 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cahill et al (US 5,998,500) in view of Schehlmann et al (US 6,482,394).

Cahill discloses (abstract, 3:34 – 48, 4:9 – 15, 6:54 – 56, claim 1) a bimodal polymer composition comprising at least two polymers, polymer I with anionic character and polymer II with cationic character, forming an interpenetrating polymer network (IPN), reading on Applicant's claim 1. Cahill discloses that the MW of the polymers should be between 400 – 800 and that larger MWs can also be used, but fails to quantify said larger MWs, specifically 1,000 – 1,000,000 daltons of the instant claim.

The interpenetrating polymer is defined as one of the polymers being synthesized in the presence of the other (4:9 – 15). The starting materials can be monomers, or low MW oligomers or polymers (4:53 – 57). Polymer 1 comprises (table in columns 4 and 5, claim 6) carboxylate salt monomer units forming polyacrylic acid, polymethacrylic acid, polyacrylate, polymethacrylate, polyethylenesulfonate, etc., reading on Applicant's claims 4 and 31.

Cahill's cationic polymer II comprises (table in column 4 and 5, claim 7) ammonium derivative monomer units such as dimethylaminoethyl methacrylate, quaternized adduct thereof, etc., reading on Applicant's claims 8, 10, 11 and 24.

Regarding claims 7, 28, 43 and 44: Cahill discloses (5:28 – end, 6:16 - 20) that the polymers do not need to be fully functionalized as anionic and cationic, instead incomplete functionalized polymers can be used to adjust the ionic interactions involved in forming the IPN. Cahill discloses 10 – 35 weight% of polymer I and 10 – 35 weight% of polymer II, which may be made either purely of anionic or cationic monomer units, respectively, or in combination with other unfunctionalized monomer units, the former reading on Applicant's percentage of anionic and cationic units of claims 7 and 28. Cahill's percentages also read on applicant's 10 – 90% concentration of the first and the second polymers of claims 43 and 44.

Cahill discloses (6:28 – 34) that the IPN can be modified to meet specific manufacturing needs, such as complexing with polyacrylic acid or branched polyethyleneimine, reading on Applicant's cross-linking or multifunctional units of claims 19 and 21.

Schehlmann discloses (abstract, 2:1 – 7) hair treatment compositions comprising at least one anionic and at least one cationic polymer, such as carboxyl groups and quaternary amine groups, respectively. The cationic polymers have a molecular weight ranging from 500 – 1,000,000 and the cationic polymers have a MW ranging from 500 – 1,000,000 (2:1 – 7), encompassing Applicant's ranges.

Art Unit: 1796

Schehlmann is silent in naming the composition an “interpenetrating polymer network” (or IPN). However, since Schehlmann’s polymer composition containing the cation is made from various monomers and combined with the anion polymer which defines an IPN, and it is made in the same manner and with the same monomer units as claimed by applicant, (3:9 – 28, 7:45 – end, 8:1 – 30), it is inherently an interpenetrating polymer network, reading on Applicant's claim 1. Additionally, it is the examiner’s position that this is further evidenced by Cahill’s disclosure set forth above where Cahill defines an IPN as one polymer being synthesized in the presence of the other polymer, with one polymer having anionic character and the other having cationic character (4:9 – 15, 4:53 - 57), where the process and the resulting bimodal polymer, which is stable because of its ionic interactions, is substantially identical to Schehlmann’s disclosure.

Schehlmann discloses that the anionic polymer comprises (7:45 – end, 8:1 – 30) carboxyl groups, acrylic or methacrylic acid and salts thereof, fumaric acid and anhydrides, sulfonic groups, itaconic anhydride, etc., reading on Applicant's claims 4 and 31.

The cationic polymer comprises (columns 2, 3, 4:1 – 12, 7:1 - 34) dialkyl amino alkyl methacrylates, unmodified or quaternized, such as dimethylaminoethyl methacrylate, and various other monomers, reading on Applicant’s claims 8, 10, 11 and 24. Preferably, 2 – 50% of the cationic polymer composition comprises cationic monomers (3:9 – 14), reading on Applicant’s percentages in claim 28.

The cationic polymer also comprises water insoluble monomer units such as esters of (meth)acrylic acid, including butyl methacrylate (4:24 – 31), reading on Applicant's claims 12, 14, and 15.

The cationic polymer also comprises (3:15 – 18, 4:14 – 22) a water soluble monomer, such as hydroxypropyl methacrylate, reading on Applicant's claims 16 and 18.

The composition comprises (3:23 – 27, 4:32 – 50) polyfunctional monomer units with crosslinking functionality such as acrylates and methacrylates, reading on Applicant's claims 19 and 21.

The cationic polymer also comprises monomers of anionic functionality such as acrylic acid, methacrylic acid and esters thereof (4:24 – 31), reading on Applicant's claims 22 and 23.

Schehlmann discloses (8:7 – 12) grafting the methacrylate with an alkylene glycol, reading on Applicant's alcohol as a chain modifier for the first polymer in claims 41 and 42.

Applicant claims 10 – 90 weight % of the first polymer and 10 – 90 wt% of the second polymer. Schehlmann discloses (table 1 and table 2) using 1:0.5 and a 1:1 ratios of Luvimer:luviquat (anionic and cationic polymers), which reads on Applicant's broad concentration range for the two polymers in claims 43 and 44.

Regarding claim 45: Schehlmann is silent on the T_g of the composition. However, since Schehlmann's composition is substantially identical to Applicant's claimed composition, it will inherently have the same T_g as claimed by applicant.

Art Unit: 1796

Alternatively, it would have been obvious to one of ordinary skill in the art to have optimized the percentages of each monomer or used certain combination of monomers or polymers from the list of monomers or polymers disclosed by Schehlmann and claimed by Applicant to arrive at the same Tg as claimed by Applicant.

The bimodal polymer is used as sprays and foam for hair treatment (1:8 – 23), reading on Applicant's personal care fixative of claim 53. It includes alcohol as a volatile solvent in amounts of 55 and 80% (8:32 – 47), reading on Applicant's claims 54 and 55, neutralizing agents and alcohols (8:32 – 51), reading on Applicant's claim 56, and colorants, preservatives, emulsifiers, fragrances, stabilizers, etc. (8:52 – 56), reading on claim 58.

Cahill discloses that larger MWs of the cationic and anionic polymers can also be used but is silent on the specific MW. However, it would have been obvious to one of ordinary skill in the art to have substituted Cahill's MWs with Schehlmann's MWs since Cahill discloses that larger MW can also be used and both Cahill and Schehlmann disclose compositions comprising the same cationic and anionic polymers with ionic interactions and crosslinking functionalities.

Cahill discloses that the cationic and anionic polymers may be made in combination with other unfunctionalized monomer units, and that the IPN can be modified to meet specific manufacturing needs, such as complexing with polyacrylic acid or branched polyethyleneimine. Cahill does not explicitly disclose that these monomers are water soluble or water insoluble. However, it would have been obvious to

Art Unit: 1796

one of ordinary skill in the art to have added them in Cahill's composition as taught by Schehlmann, since Cahill discloses that other monomers can be added and both disclose compositions comprising the same cationic and anionic polymers with ionic interactions and crosslinking functionalities.

It would have been obvious to one of ordinary skill in the art to have used Cahill's composition to make a personal care fixative as taught by Schehlmann, since both disclose compositions comprising the same cationic and anionic polymers with ionic interactions, additional monomers and crosslinking functionalities.

Cahill discloses (6:43 – 51) that the glass transition temperature can be controlled by selecting the polymers used but is silent as to a specific number. However, it would have been obvious to one of ordinary skill in the art to have optimized the percentages of each monomer or used certain combination of monomers or polymers from the list of monomers or polymers disclosed by Cahill, and specifically in view of the MW disclosed by Schehlmann, to arrive at the desired Tg.

Response to Arguments

Applicant's arguments filed 4/28/09 have been fully considered but they are not persuasive.

Applicant submits that Cahill does not disclose MW of 1,00 – 1,000,000, as per the amended claim.

Cahill discloses a preference for 400 – 800 daltons, but also discloses that larger MWs can be used. Schehlmann specifically discloses MW of 500 – 1,000,000 for the

Art Unit: 1796

same cationic and anionic polymers disclosed by Cahill. Therefore, it would have been obvious to use MW as high as Schehlmann's in Cahill's composition since Cahill teaches that higher MW can be used.

Applicant submits that Schehlmann does not teach an IPN and that the polymers' MWs are not in the 1,000 – 1,000,000 range.

Examiner respectfully disagrees. Schehlmann discloses MW of 500 – 1,000,000 for both the anionic and cationic polymers (see column 2, lines 1 - 7). Regarding an IPN: although Schehlmann is not explicit as to how they were made, the disclosure teaches that said polymers are made from monomers and it is also well known that the cationic and anionic nature of polymers will additionally cause ionic interaction between them, both of which define an IPN. Cahill discloses that an IPN "relates to polymer blends in which the polymers exists in a network that is formed when at least one of the polymers is synthesized in the presence of the other." Therefore, it is reasonable to assume that Schehlmann's composition is an IPN and especially since it is being used as a personal care fixative as claimed by Applicant. If, *arguendo*, the composition is not an IPN, which it is believed to be, Applicant's claim is being rejected over Cahill who clearly discloses an IPN. Schehlmann is used herein to teach the higher MW's and the composition's use as a personal care fixative.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 1796

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRANCES TISCHLER whose telephone number is (571)270-5458. The examiner can normally be reached on Monday-Friday 7:30AM - 5:00 PM; off every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jim Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ling-Siu Choi/
Primary Examiner, Art Unit 1796

Frances Tischler
Examiner
Art Unit 1796

/FT/